

## A rare complication of COVID-19: Pneumomediastinum

Air in mediastinum by novel Coronavirus

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### Abstract

COVID-19 is still common and we do not know enough about its complications. The presence of air in the mediastinum is called pneumomediastinum. Since spontaneous pneumomediastinum is rare, pneumomediastinum is started to be reported in Covid-19 patients.

A 26-year-old male patient was admitted to the emergency department with fever, shortness of breath and sore throat, and was found to have COVID-19 as a result of examinations. The treatment of the patient was started, and on the 6th day of the treatment, it was observed that the patient had an increase in shortness of breath and a new cough. Free air was seen in the mediastinum on the imaging. The patient who was diagnosed with pneumomediastinum was discharged with antibiotherapy and favipiravir treatment.

Spontaneous pneumomediastinum is a rare complication of COVID-19 infection. Here, we present a case of COVID-19 developing pneumomediastinum 6 days after the symptoms started.

### Keywords

COVID-19; Pneumomediastinum; Complication

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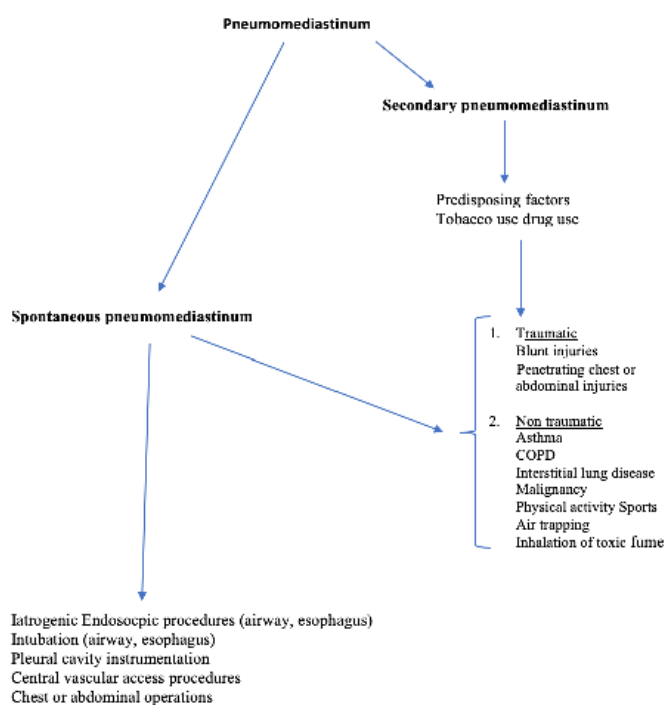
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**Introduction**

A new type of Coronavirus 2019 (COVID-19), also known as severe acute respiratory failure syndrome-coronavirus 2 (SARS-COV-2); it has not dropped from the world agenda since December 2019, when the first case appeared. As far as we know, COVID-19 is a virus with a high mortality rate, causing severe pneumonia and acute respiratory distress syndrome (ARDS) [1].

The presence of air in the mediastinum is called Pneumomediastinum, and pneumomediastinum is divided into spontaneous and secondary. Although spontaneous pneumomediastinum is extremely rare, it is frequently seen in healthy young men, and in its etiology, pressure-related rupture of peripheral pulmonary alveoli plays a role in the presence of various triggering factors [2].

Cases of pneumomediastinum rarely present with symptoms, it is usually detected incidentally, and it mostly regresses without the need for treatment [3].



Pneumomediastinum classification

Respiratory diseases such as asthma and respiratory tract infections can cause pneumomediastinum, especially during exacerbation periods with excessive cough [4].

We would like to present in this case COVID-19 disease as a factor that triggers pneumomediastinum such as asthma, interstitial lung disease, COPD, bronchiectasis, lung cysts, lung malignancy, and excessive vomiting.

**Case Report**

A 26-year-old male patient was admitted to the emergency department with complaints of difficulty in breathing, wheezing, fever and sore throat. There was no history of trauma. There was no finding other than tachypnea on admission examination. In the patient's history, except for 10 pack-year (active smoker) smoking, no characteristic was detected. A throat swab sample was taken and computed tomography (CT) of the thorax was taken with the suspicion of COVID-19 due to symptoms similar to upper respiratory tract disease. No pathology was found on thorax CT (Figure 1). In the patient, COVID-19 was considered, and chloroquine treatment was arranged and sent to home isolation.

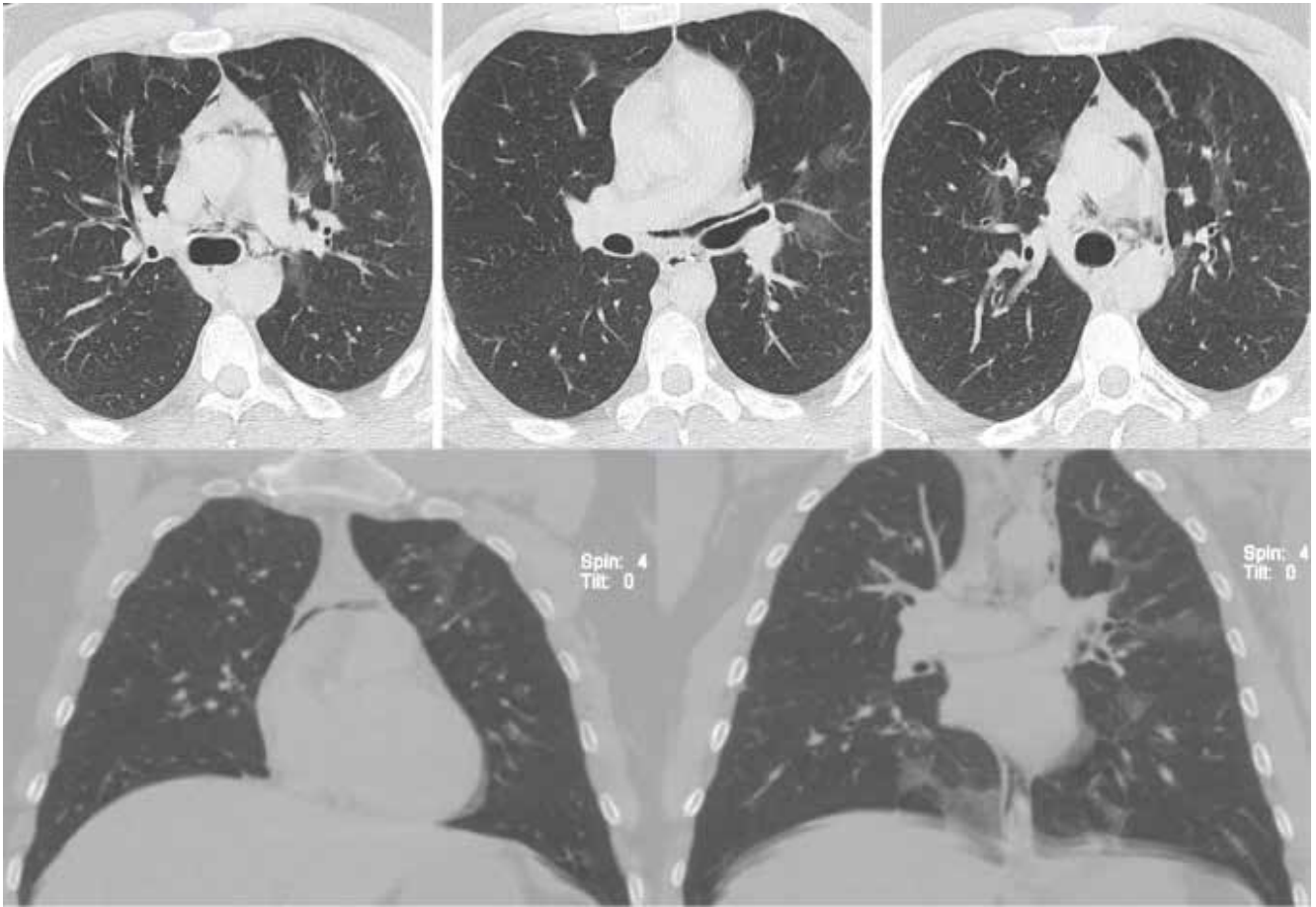
The patient applied to the COVID-19 outpatient clinic again after 6 days, when his complaints did not go away, his dyspnea deepened and coughing added. When the thorax CT taken this time was compared with the thorax CT 6 days ago, there were newly emerged free air densities in the mediastinum. In addition, unlike the old CT, scattered localized ground glass densities were observed in the upper lobes in the bilateral hemithorax (Figure 2).

In laboratory tests, CRP was found to be 106.35mg / L. Ferritin, D-Dimer and other blood parameters were normal. In the physical examination, his general condition was good, he was conscious, and the patient was oriented and cooperative. Vital signs were as follows: TA: 110/70 SD: 15 SAT: 92. Fever was found to be 37.1. The patient was hospitalized in the COVID-19 service with a pre-diagnosis of COVID-19 and mediastinitis.

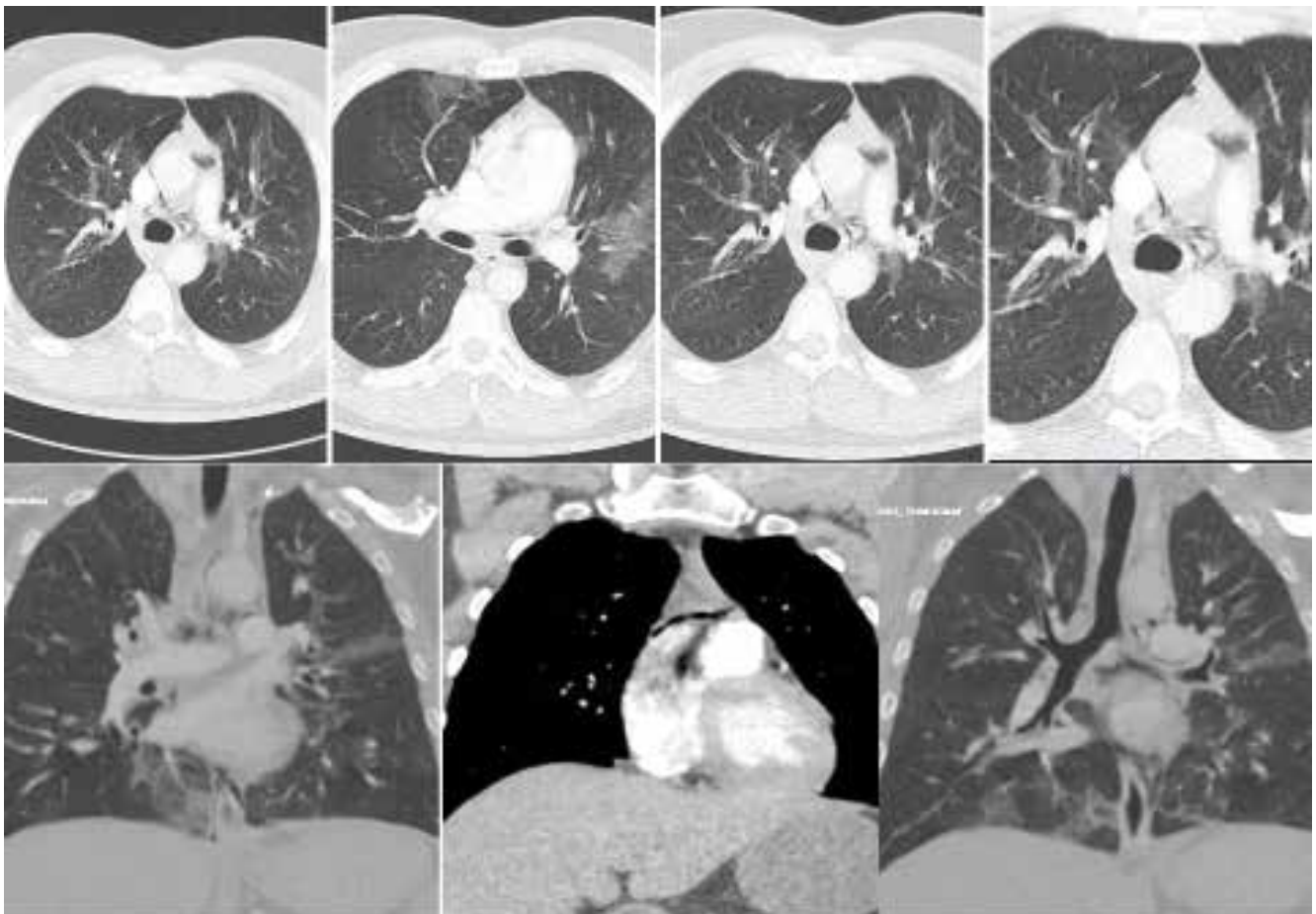
The control Thorax Angio CT, taken on the 2nd day of the patient's hospitalization by the radiologist, revealed the following: "In addition to the appearance compatible with COVID-19 pneumonia, the presence of free air around the vascular structures, trachea, main bronchi and esophagus in



**Figure 1.** The first application of the case to the COVID-19 clinic



**Figure 2.** 6<sup>th</sup> day after the first application: ground glass and pneumomediastinum view



**Figure 3.** Pneumomediastinum and suspicious signs of mediastinitis

the mediastinum fat planes is noticeable. Thrombophlebitis - mediastinitis secondary to vasculitis ”(Figure 3).

Thoracic surgery specialist who evaluates the patient as a result of the desired consultation in the COVID-19 service, evaluated as “the patient’s clinic is compatible with pneumomediastinum” and made combined antibiotherapy recommendations. The patient, who was treated with moxifloxacin, Favipavir, chloroquine and oxapar, was discharged with home isolation recommendations at the end of the 7th day of his hospitalization, when his vitals were stable and no pathology requiring hospitalization was detected.

## Discussion

Although spontaneous Pneumomediastinum is generally a self-limiting disease, it may rarely lead to severe respiratory and circulatory disorders, but its formation mechanism is not fully known [3,5].

In COVID-19 infection, it is thought that pneumomediastinum may develop due to damage to the alveolar membrane by the virus and its explosion as a result. It is thought that this damage may be caused by the pressure gradient difference between the alveoli and the pulmonary interstitium [3,6].

The relationship between the novel coronavirus and pneumomediastinum has been discussed in many case series since December 2019, when the first case related to the novel coronavirus was announced [6]. There are articles that argue that this relationship is a marker that will affect the prognosis of the disease negatively [6] and that this does not affect the prognosis [8]. Our case is well documented for the relationship between Novel Coronavirus and Pneumomediastinum.

We think that COVID-19 infection may be associated with spontaneous air leakage, and further research is needed to delineate the mechanisms that trigger it and the impact on the course and outcome of the disease.

## Conclusion

Pneumomediastinum can be a spontaneous condition seen in COVID-19 patients. In non-COVID-19 patients, it is commonly self-limited, but COVID-19 patients with pneumomediastinum may have more complicated results. Larger studies will show us possible correlations.

## Scientific Responsibility Statement

*The authors declare that they are responsible for the article’s scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.*

## Animal and human rights statement

*All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.*

## Conflict of interest

*None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.*

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